

Flights of the Wood Ant *Formica lugubris* (Hym., Formicidae) in Ireland

By JOHN BREEN*

Most of the studies of the flight activities of *Formica* have been made on the North American species (Scherba, 1958; Talbot, 1959-1972; Kannoński, 1959, 1963; Clark & Comanor, 1972). These studies suggest a pattern of short morning flights on successive days with only small numbers of alatae taking flight each day. In contrast, there are few detailed studies of the flight activities of European *Formica*. Donisthorpe (1927: 297) observed a mating swarm of one of the *F. rufa*-group species at Aviemore, "in the middle of the afternoon" of 15.vi.1911. Marikovskiy (1961) recorded mass flights of alatae from wood ant nests and swarms of alatae congregating on mountain tops. There is also an old record of *F. aquilonia* Yarrow swarming on top of Ben Nevis in 1896 (Brice, in Collingwood, 1958). The purpose of this note is to report observations of flights made during a recent study of *F. lugubris* Zett. Further details of the localities mentioned can be found in Breen (1977).

Production of Alatae

Alatae occurred in most medium (diameter *ca.* 0.7m) to large-sized active nests and were first observed in the nests on 12.v.1973, 11.v.1974 and 23.iv.1975. Males seemed to appear first. Most nests produced both sexes, a few produced males only and none were seen with females only. Alatae (males) were last seen in the nests in late September during 1973. Alatae occurred in nests at all the known Irish localities (c.f. Breen, 1977).

There were considerable differences in the time of appearance of alatae in different nests in the South Tipperary plantation woods. During 1973, alatae were first observed in Moore's Wood on 12 May and were present in all the active nests during the next few weeks. However, in some nests — generally large, non-active and shaded, sexual larvae and pupae, but no alatae were observed as late as the 20 June, and callow males and many sexual pupae were present in one such nest (MW 284a) on 6 July. I do not know if these late emerging alatae ever flew from the nests. Similar observations have been made on the American species *F. ulkei* Emery: "The mound that is shaded or has only a northern exposure to the sun lags in activities such as the development of brood and the initiation of activity in the spring" (Scherba, 1958).

Flights

Flights were first observed in 1975. However flight dates before this can be reasonably inferred from the appearance of dealate females on the ground: 26.v.1973, 13.vi.1974. During 1975, flights were observed from five nests in Kilcoran Wood on six days from 6-20 June (table 1) and the first and last flights at each nest may not have been witnessed.

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TABLE 1. Flight activities at five nests in Kilcoran Wood during June 1975. All times are in Irish summer time. Key: — no alatae on mound; + flights; ? alatae on mound but no flight; * no observation made.

Nest	Date						Take-off direction
	6	7	9	10	11	20	
440a	+	+	?	—	—	—	ESE
440f	+	+	+	?	+	+	NNW
440g	+	—	—	—	—	—	SSE
437b	*	+	—	?	—	—	WSW
437d	*	+	+	+	+	+	NNW
Starting time	08.00	08.30	08.30	10.40	10.40	09.35	

Males and females flew from the vegetation on or near the nest, and females also climbed nearby trees (up to 5m high) and flew from their highest points. Such differences between males and females were reported in *F. ulkei* (Talbot, 1959) and *F. opaciventris* Emery (Scherba, 1961). Flights of males only and of females only occurred from the same nest (KC-437d) on different days. All the flights lasted 30-45 minutes and although 20-30 alatae per minute was the highest number seen taking flight, the usual number was 5-10 per minute. Flights took place in the morning and the actual time of flight varied according to the temperature; each flight started after the first direct sun-rays hit the nest, air temperature 17.5-18.0°C. Alatae about to fly flapped their wings beforehand (cf. Kanno, 1963). One flight started at 16.2°C but the small number of alatae which took flight all landed on nearby trees. These observations are very similar to the observations made on the North American *Formica* (references above).

Observations made on 20.v.1977 in Kilcoran Wood (nest 440g) provide further evidence of the dependence of flights on air temperature. The observations began at 03.30. At 06.50 alatae (1 ♀, 4 ♂) appeared on the nest surface. However, cloud cover was 100%, air temperature 11.5°C and it was misting. At 10.30 it cleared (air temp. 13.6°C). At 10.45 ca. 200 alatae appeared on the nest. Clouds reappeared but this was followed by another clearance at 11.30 (air temp. 13.9°C). At 11.50 four males and one female took flight. At 12.00 a 5-minute count gave 17 males and 4 females taking flight (air temp. 19.4°C). Only a few more alatae took flight and it ceased by 12.30 (air temp. 20.6°C). This flight was the latest in the day I have seen and it appears to have been delayed by the repeated appearance of clouds.

The direction of take-off flight was quite constant at each of the five nests (cf. table 1). However the directions appeared to bear no obvious relationship either to each other, or to uphill/downhill direction, and may have been dictated by the tree positions at each site.

Alatae were rarely seen on the surface of the nest at other times, and this may be due to a circadian rhythm of alate emergence from the nest such as that demonstrated by McCluskey (1965) in alatae of five ant species, including the formicine *Campanotus clarithorax* Emery.

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TROSLEY COUNTRY PARK (TROTTCISLIFFE) NEAR WROTHAM, KENT.—Entomologists may be interested to know that the 160 acres of woodland and downs south of Vigo Village has been a County Council Country Park since 1976. As an area of national importance biologically (Nature Conservancy S.S.S.I. Grade 1) the Council is keen to receive past records and observations which may be of use in formulating a management plan that will help to conserve the natural history interest of the Park. If you can help, please write to the County Estates Officer and Valuer, Springfield, Maidstone. If you wish to collect specimens or are organising a group visit, would you please first contact the above address.—N. F. HEAL, Fosters, Detling Hill, near Maidstone, Kent.

THE CLOUDED SILVER (BAPTA TEMERATA HUBN.) IN OCTOBER.—A fresh specimen of *B. temerata* Hubn. came to the m.v. light in my garden on 24th October 1978. Presumably this must be the result of our unusual weather this year. Today, 27th November, I have a group of purple and white spring crocus and a *Narcissus bulbocodium conspicuus* in full bloom.—J. A. C. GREENWOOD, Hambleton House, Rogate, West Sussex.